

# **METHODS AND APPARATUS FOR VIBRATION AND BUFFET SUPPRESSION**

## **ABSTRACT OF THE DISCLOSURE**

5           Apparatus and methods for hybrid actuation and suppressing vibration are disclosed.  
In one embodiment, a hybrid actuator includes a first actuator and a second actuator linked to  
move a component a combined actuation distance. The first actuator may include a hydraulic  
piston, and the second actuator may include a piezo-electric actuator. In another  
embodiment, the first actuator is activated within a first frequency range, and the second  
10   actuator is activated within a second frequency range. In another aspect, a method is  
provided combining a first actuation movement and a second actuation movement. In  
another embodiment, a system is provided for suppressing movement of a component  
including a combination of actuators. In a further embodiment, an aircraft is provided with  
hybrid motion suppression including a first actuator and a second actuator linked to activate a  
15   control surface.